What is claimed is:

1. A filter, comprising: a first integrator including a first transconductance circuit which performs a voltage-current conversion of a difference between a voltage of a filter input terminal and a voltage of a filter output terminal, and a first capacitor; and

a second integrator including a second transconductance circuit which performs a voltage-current conversion of a difference between an output voltage of said first integrator and the voltage of said filter output terminal, a third transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal wherein an output current thereof is added to an output current of said second transconductance circuit, and a second capacitor,

wherein it is configures so that an output voltage of said second integrator and the voltage of said filter input terminal may be added, and

wherein an output terminal of said second transconductance circuit becomes an output terminal of said filter.

2. A filter, comprising: a first integrator including a first transconductance circuit which performs a voltage-current conversion of a difference between a voltage

of a filter input terminal and a voltage of a filter output terminal, and a first capacitor; and

a second integrator including a second transconductance circuit which performs a voltage-current conversion of a difference between an output voltage of said first integrator and a voltage of said filter output terminal, a third transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal wherein an output current thereof is subtracted from an output current of said second transconductance circuit, and a second capacitor,

wherein it is configures so that an output voltage of said second integrator and the voltage of said filter input terminal may be added, and

wherein an output terminal of said second transconductance circuit becomes an output terminal of said filter.

3. A filter, comprising: a first integrator including a first transconductance circuit which performs a voltage-current conversion of a difference between a voltage of a filter input terminal and a voltage of a filter output terminal, and a first capacitor; and

a second integrator including a second transconductance circuit which performs a voltage-current conversion of a

difference between an output voltage of said first integrator and the voltage of said filter output terminal,

a third transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal wherein an output current thereof is added to an output current of said second transconductance circuit,

a fourth transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal wherein an output current thereof is subtracted from the output current of said second transconductance circuit, and

a second capacitor,

wherein it is configures so that an output voltage of said second integrator and the voltage of said filter input terminal may be added, and

wherein an output terminal of said second transconductance circuit becomes an output terminal of said filter.

4. The filter according to claim 3 wherein a transconductance value of said third transconductance circuit is larger than a transconductance value of said fourth transconductance circuit.

5. The filter according to claim 3 wherein the

transconductance value of said third transconductance circuit is smaller than the transconductance value of said fourth transconductance circuit.

6. A notch filter, comprising: a first integrator including a first transconductance circuit which performs a voltage-current conversion of a difference between a voltage of a filter input terminal and a voltage of a filter output terminal, and a first capacitor; and

a second integrator including a second transconductance circuit which performs a voltage-current conversion of a difference between an output voltage of said first integrator and the voltage of said filter output terminal, a third transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal wherein an output current thereof is added to an output current of said second transconductance circuit, and a second capacitor,

wherein it is configures so that an output voltage of said second integrator and the voltage of said filter input terminal may be added, and

wherein an output terminal of said second transconductance circuit becomes an output terminal of said filter.

7. A notch filter, comprising: a first integrator

including a first transconductance circuit which performs a voltage-current conversion of a difference between a voltage of a filter input terminal and a voltage of a filter output terminal, and a first capacitor; and

a second integrator including a second transconductance circuit which performs a voltage-current conversion of a difference between an output voltage of said first integrator and the voltage of said filter output terminal, a third transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal wherein an output current thereof is subtracted from an output current of said second transconductance circuit, and a second capacitor,

wherein it is configures so that an output voltage of said second integrator and the voltage of said filter input terminal may be added, and

wherein an output terminal of said second transconductance circuit becomes an output terminal of said filter.

8. A notch filter, comprising: a first integrator including a first transconductance circuit which performs a voltage-current conversion of a difference between a voltage of a filter input terminal and a voltage of a filter output terminal, and a first capacitor; and

a second integrator including a second transconductance circuit which performs a voltage-current conversion of a difference between an output voltage of said first integrator and the voltage of said filter output terminal, a third transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal wherein an output current thereof is added to an output current of said second transconductance circuit, and a fourth transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal wherein an output current thereof is subtracted from the output current of said second transconductance circuit, and a second capacitor,

wherein it is configures so that an output voltage of said second integrator and the voltage of said filter input terminal may be added, and

wherein an output terminal of said second transconductance circuit becomes an output terminal of said filter.

9. An all-pass filter, comprising: a first integrator including a first transconductance circuit which performs a voltage-current conversion of a difference between a voltage of a filter input terminal and a voltage of a filter output

terminal, and a first capacitor; and

a second integrator including a second transconductance circuit which performs a voltage-current conversion of a difference between an output voltage of said first integrator and the voltage of said filter output terminal, a third transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal wherein an output current thereof is subtracted from an output current of said second transconductance circuit, and a second capacitor,

wherein it is configures so that an output voltage of said second integrator and the voltage of said filter input terminal may be added, and

wherein an output terminal of said second transconductance circuit becomes an output terminal of said filter.

10. An all-pass filter, comprising: a first integrator including a first transconductance circuit which performs a voltage-current conversion of a difference between a voltage of a filter input terminal and a voltage of a filter output terminal, and a first capacitor; and

a second integrator including a second transconductance circuit which performs a voltage-current conversion of a difference between an output voltage of said first integrator

and the voltage of said filter output terminal, a third transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal wherein an output current thereof is added to an output current of said second transconductance circuit, and a fourth transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said filter input terminal and the voltage of said filter output terminal wherein an output current thereof is subtracted from the output current of said second transconductance circuit, and a second capacitor,

wherein it is configures so that an output voltage of said second integrator and the voltage of said filter input terminal may be added, and

wherein an output terminal of said second transconductance circuit becomes an output terminal of said filter.

11. A filter, comprising: a first integrator including a first full differential transconductance circuit which performs a voltage-current conversion of a difference between a voltage of a positive phase filter input terminal and a voltage of a negative phase filter input terminal, a second full differential transconductance circuit which performs a voltage-current conversion of a difference between a voltage

of a positive phase filter output terminal and a voltage of a negative phase filter output terminal, and a first capacitor; and

a second integrator including a third full differential transconductance circuit which performs a voltage-current conversion between a difference of a voltage of a positive polarity output terminal and a voltage of a negative polarity output terminal of said first integrator, a fourth full differential transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said positive phase filter input terminal and the voltage of said positive phase filter output terminal wherein an output current thereof is added to an output current of said third full differential transconductance circuit, a fifth full differential transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said negative phase filter input terminal and the voltage of said negative phase filter output terminal wherein an output current thereof is added to the output current of said third full differential transconductance circuit, a sixth full differential transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said positive phase filter output terminal and the voltage of said negative phase filter output terminal, and second capacitors,

wherein it is configured so that a voltage of a positive polarity output terminal of said second integrator and the voltage of said positive phase filter input terminal may be added, and a voltage of a negative polarity output terminal of said second integrator and the voltage of said negative phase filter input terminal may be added as well, and

wherein a positive polarity output terminal and a negative polarity output terminal of said third full differential transconductance circuit become said positive phase filter output terminal and said negative phase filter output terminal, respectively.

12. A filter, comprising: a first integrator including a first full differential transconductance circuit which performs a voltage-current conversion of a difference between a voltage of a positive phase filter input terminal and a voltage of a negative phase filter input terminal, a second full differential transconductance circuit which performs a voltage-current conversion of a difference between a voltage of a positive phase filter output terminal and a voltage of a negative phase filter output terminal, and a first capacitor; and

a second integrator including a third full differential transconductance circuit which performs a voltage-current conversion between a difference of a voltage of a positive polarity output terminal and a voltage of a negative polarity

output terminal of said first integrator, a fourth full differential transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said positive phase filter input terminal and the voltage of said negative phase filter input terminal wherein an output current thereof is added to an output current of said third full differential transconductance circuit with positive polarity, a fifth full differential transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said positive phase filter input terminal and the voltage of said negative phase filter input terminal wherein an output current thereof is added to the output current of said third full differential transconductance circuit with reversed polarity, a sixth full differential transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said positive phase filter output terminal and the voltage of said negative phase filter output terminal wherein an output current thereof is added to the output current of said third full differential transconductance circuit with positive polarity, a seventh full differential transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said positive phase filter output terminal and the voltage of said negative phase filter output terminal wherein an output current thereof is added to the output current of said third full differential

transconductance circuit with reversed polarity, a eighth full differential transconductance circuit which performs a voltage-current conversion of a difference between the voltage of said positive phase filter output terminal and the voltage of said negative phase filter output terminal, and second capacitors,

wherein it is configured so that a voltage of a positive polarity output terminal of said second integrator and the voltage of said positive phase filter input terminal may be added, and a voltage of a negative polarity output terminal of said second integrator and the voltage of said negative phase filter input terminal may be added as well, and

wherein a positive polarity output terminal and a negative polarity output terminal of said third full differential transconductance circuit become said positive phase filter output terminal and said negative phase filter output terminal, respectively.